

Appendix J

Cross-Cutting Issues

Policy Recommendations

Summary List of Policy Option Recommendations

	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2007–2020 (Million \$)	Cost-Effective-ness (\$/tCO ₂ e)	Status of Option
		2010	2020	Total 2007–2020			
CC-1	GHG Inventories and Forecasts	Not quantified					UC
CC-2	State GHG Reporting	Not quantified					UC
CC-3	State GHG Registry	Not quantified					UC
CC-4	State Climate Public Education and Outreach	Not quantified					UC
CC-5*							
CC-6	Options for State GHG Goals or Targets	Not quantified					2020 Goal: UC 2050 Goal: Super-majority
CC-7	The State's Own GHG Emissions	Not quantified					UC

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalents; UC = unanimous consent.

* There is no policy option CC-5 (Adaptation), because this option, listed in the catalog of state policy options, was determined not to be a priority for analysis by the CCAC.

CC-1. GHG Inventories and Forecasts

Policy Description

Greenhouse gas (GHG) emissions inventories and forecasts are essential to understanding the magnitude of all emission sources and sinks (both natural and those resulting from human endeavors), the relative contribution of various types of emission sources and sinks to total emissions, and the factors that affect trends over time. The initial use for inventories and forecasts will be to inform state leaders and the public on statewide trends, opportunities for mitigating emissions or enhancing sinks, and verifying GHG reductions associated with implementation of Montana's Climate Action Plan. However, it is expected that other uses of the data will be identified as the program evolves. The responsibility for preparing GHG inventories and sinks should reside with Montana's Department of Environmental Quality (DEQ) which has the expertise needed to systematically compile information on GHG sources and sinks using established methods and data sources. Other state agencies as well as private facilities (sources) will need to provide data to DEQ on a periodic basis. This program should be integrated with existing DEQ inventory and forecast functions as seamlessly as possible. Whenever possible, data from existing reporting systems will be used. Development of GHG emissions inventory and forecasting systems for Montana should take advantage of the substantial related expertise found in the state's colleges and universities. Opportunities for public participation by voluntary self-reporting of individual and community GHG reductions (with appropriate privacy protection) should be made available, even where the data are qualitative. The inventory and forecast will be an ongoing effort that will be improved over time, based on improvements to the accuracy and completeness of data needed to support this effort.

Policy Design

The Cross-Cutting Issues Technical Work Group (CC TWG) recommends that Montana develop its capacity for statewide emissions inventories and forecasts. Key elements are noted below. Additional information regarding important program characteristics is included in the Annex to Appendix J, GHG Inventories and Forecasts Design Options Matrix.

Goals:

- Develop a periodic, consistent, and complete inventory of emission sources and sinks on a continuing basis with forecasts. The time period for forecasts should cover a 20-year planning horizon to be consistent with other state planning efforts. The inventory and forecast should be updated once every 2 years and include the decennial years (e.g., 2010, 2020, and 2030).
- Perform inventory of all natural and man-made emissions generated within the boundaries of the state (i.e., production-based inventory approach) as well as emissions associated with energy imported and consumed in the state (i.e., consumption-based inventory approach).
- Provide a projection of the emissions from the same source categories and on the same basis for a realistic forecast of what the emissions will be in future years, reflecting expected growth and application of scheduled and expected mitigation options.

- Provide a basis for documenting reductions and credits from year to year.

Timing: The program should be implemented as soon as possible, as allowed by funding. The process should be updated to reflect significant reductions or increases, beginning with every year for major point (Title V) sources and every 2 years for other sources.

Parties Involved: All emission sources and sinks (both natural and those resulting from human endeavors) should be included.

Other: Provide user-friendly options for estimating GHG emissions reductions by individuals, families, and communities. Methods will be recommended for voluntary use and self-reporting. The data will parallel other, more scientifically rigorous reporting. The intent is to encourage awareness, understanding, and broad participation in reducing state GHG emissions by citizens and communities.

Implementation Mechanisms

The Montana DEQ, assisted by other state agencies and state colleges and universities, and integrated with DEQ's existing inventory and forecasting functions.

Related Policies/Programs in Place

DEQ emissions inventory for criteria pollutants.

Type(s) of GHG Reductions

Establishing a GHG inventory and forecasting function within state government is an enabling policy to encourage tracking, management, and ultimately reduction of GHG emissions. It does not reduce GHG emissions itself per se. Public disclosure of GHG emissions may encourage sources to reduce emissions.

Estimated GHG Savings and Costs per MtCO₂e

This option could be considered an administrative and enabling function of the Climate Action Plan (including enabling any future cap-and-trade options) and will incur overhead costs but not directly reduce emissions per se except where these data motivate reductions for public relations by individual companies or sources.

Data Sources: Many.

Quantification Methods: Several—they will be designed to follow standard, comparative, and accepted approaches that allow exchange/sale of emissions credits should this become a need in Montana.

Key Assumptions: Reporting will establish a baseline for GHG emissions and provide a monitoring tool for assessing the efficacy of the Climate Action Plan. Adjustments will be made in the Plan as certain techniques prove more or less beneficial than projected. Downward trends will allow for further incentives to be developed for sectors that show continuous improvement. Effective emission sinks can be identified and augmented. Public participation will inform and involve citizens in the overall goal of GHG emission reductions. Forecasting will allow state

officials to plan for, implement, and monitor necessary additional emission sources or sinks to the emission cycle.

Key Uncertainties

- Adequacy of ongoing funding for a statewide GHG inventory and forecasting function.
- Quality and quantity of existing data that will be useful and can be effectively integrated into a uniform reporting system.
- Quality and timeliness of emission sink quantification and inclusion of all potential sinks.
- Most effective frequency of reporting.

Additional Benefits and Costs

- The preparation of periodic inventories and forecasts at the level of effort conducted for the Climate Change Advisory Committee (CCAC) process is likely to require additional assistance and/or resources for the Montana DEQ.

Feasibility Issues

- Incorporating the reporting and forecasting efforts into the existing workload demands within the Montana DEQ.
- Gathering the required data in a timely and consistent manner.
- Where self-reporting is the best method of obtaining data, overcoming reticence to report accurately for fear of retribution or financial disincentives.
- Maintaining the skills and expertise to accurately forecast based on trends, particularly in the early years of reporting.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

CC-2. State GHG Reporting

Policy Description

A GHG reporting system is designed to provide for the measurement and then reporting of emissions. GHG reporting can help sources identify emission reduction opportunities and manage risks associated with possible future GHG mandates by moving up the learning curve. GHG reporting is typically a precursor for sources to participate in GHG reduction programs and a GHG emission reduction registry. Moreover, a reporting system (coupled with an associated registry) would enable sources to secure “baseline protection” to allow reductions to be credited under a future emission reduction program.

Tracking and reporting of GHG emissions would also help in the construction of periodic state GHG inventories. Reporting and the related inventory function will also provide valuable information for assessing the efficacy of measures implemented to reduce GHGs.

Tracking GHG emission performance will make it easier for sources to receive recognition and goodwill for successful emission reduction efforts.

To encourage awareness, understanding, and broad participation on the part of the public, self-reporting by individuals and communities should be allowed although self-reporting by individuals and communities would not be subject to the same standards necessary to ensure accuracy as reporting of GHG emissions by sources for inclusion in a registry. (This is considered further in CC-4, State Climate Public Education and Outreach.)

Finally, developing a GHG reporting program could enable the state to influence the development of GHG reporting practices throughout the region and nation and build consistency with other state or regional GHG reporting programs.

Policy Design

The CC TWG recommends that Montana develop GHG reporting requirements and opportunities for its sources and citizens. Key elements are noted below. Additional information regarding important program characteristics is included in the Annex to Appendix J, GHG Reporting Design Options Matrix.

- Subject to consistently rigorous quantification, GHG reporting should not be constrained to particular sectors, sources, or approaches, in order to encourage GHG mitigation activities from all quarters.
- Mandatory GHG reporting should be phased in by sectors as rigorous, standardized quantification protocols, base data, and tools become available, and as responsible parties become clear. Entities should be encouraged to report GHG emissions voluntarily before mandatory reporting applies to them; and the state, municipalities, and other jurisdictions should be encouraged to report emissions associated with their own activities and any programs they may implement.

- Mandatory reporting of direct emissions¹ should be required for stationary sources with an existing reporting requirement under Montana DEQ regulations—Annotated Rules of Montana (ARM) 17.8.1701 through 17.8.1705. Reporting of emissions associated with purchased power and heat² should be phased in, and voluntary reporting of other indirect emissions³ should be allowed. Provisions should also be made for voluntary self-reporting by individuals and communities as considered further in CC-4, State Climate Public Education and Outreach.
- Reporting should be applicable to all sources (e.g., combustion, processes, vehicles) but using common sense regarding de minimis emissions.
- The goal should be reporting of GHG emissions on an organization-wide basis within Montana but with greatest possible detail by facility, to facilitate baseline protection.
- Project-based emissions reporting should be allowed, when properly identified as such and quantified with equally rigorous consistency.
- Reporting should occur annually on a calendar-year basis for all six traditional GHGs and, to the extent possible, for black carbon.
- Every effort should be made to maximize consistency with federal, regional, and other states' GHG reporting programs.
- Development of GHG emissions inventory and forecasting systems for Montana should take advantage of the substantial related expertise found in the state's colleges and universities.
- GHG emissions reports should be verified through self-certification and Montana DEQ spot-checks; to qualify for future registry purposes, reports should undergo third-party verification.
- The reporting program should provide for appropriate public transparency of reported emissions.

Goals: Implementation of a Montana GHG Reporting Program as early as possible.

Timing: As soon as possible, preferably by 2008.

Parties Involved: Initially, mandatory for stationary sources with air quality permit; voluntary for other direct and indirect sources.

Implementation Mechanisms

Utilization of existing Montana DEQ regulations, which require all entities with an air quality permit to report emissions of regulated pollutants on an annual basis. Reporting protocols and

¹ Defined as “Scope 1” emissions in the *GHG Protocol: Designing a Customized Greenhouse Gas Calculation Tool*, World Resources Institute and World Business Council for Sustainable Development, See: <http://pdf.wri.org/GHGProtocol-Tools.pdf>

² Defined as “Scope 2” emissions in the *GHG Protocol*.

³ Defined as “Scope 3” emissions in the *GHG Protocol*.

opportunities for parties not subject to existing reporting requirements will need to be developed, probably by the Montana DEQ.

Related Policies/Programs in Place

Many sources in Montana report criteria pollutant emissions in order to comply with various federal and state regulatory programs. Most electricity generating units are also required to report carbon dioxide (CO₂) emissions to the Energy Information Administration (EIA). Some sources may report GHG emissions on a voluntary basis to federal, state, or privately run programs. Otherwise, there is no broad, statewide GHG reporting program in Montana.

Type(s) of GHG Reductions

GHG reporting is an enabling policy to encourage management and, ultimately, reduction of GHG emissions. GHG reporting does not reduce GHG emissions itself.

Estimated GHG Savings and Costs per MtCO₂e

The reporting components of this policy option would help position Montana entities for participation in an emissions trading program should one develop in the future, leading to cost savings. Although establishment of a credible reporting program is essential for participating in a trading program, these elements themselves do not reduce GHG emissions.

Key Uncertainties

Uncertainties exist with respect to quantification of some GHG emissions from some sources, but standard quantification protocols are being developed rapidly and accepted widely. There remain significant uncertainties with respect to how various state, regional, and/or federal GHG reporting programs may develop.

Additional Benefits and Costs

Not applicable.

Feasibility Issues

None cited.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

CC-3. State GHG Registry

Policy Description

A GHG registry enables measurement and recording of GHG emissions reductions at a macro- or micro-scale level in a central repository with a “transaction ledger” capacity to support tracking, management, and “ownership” of emission reductions as well as to encourage GHG reductions. It also assists with baseline protection and/or the crediting of actions by implementing programs and parties in relation to possible emissions reduction goals. It will also provide a mechanism for regional, multistate, and cross-border cooperation. Subject to appropriately rigorous quantification, participation in a GHG registry should not be constrained to particular sectors, sources, or approaches so as to encourage GHG mitigation activities from all quarters. In particular, a GHG registry should be able to incorporate activities associated with all of the options that the CCAC approves, whether reflective of reductions in emissions of GHGs or increases in biological or geological sequestration of carbon.

Policy Design

The CC TWG notes that the State of Montana has joined more than 39 other states in the effort to develop a national GHG registry through *The Climate Registry*. Being a charter state in this effort should help ensure that Montana’s needs and priorities are addressed in the course of *The Climate Registry*’s development. To the extent that Montana’s needs may not be fully met by *The Climate Registry*, the state should consider developing supplemental or ancillary registry capacity or opportunity.

Goals: Montana’s participation in creating *The Climate Registry*, and its development of any ancillary registry capacity that may be required, may include or cover all of the activities associated with all options that the CCAC recommends and the Governor accepts. A mechanism should be provided whereby Montana sources and stakeholders can keep abreast of—and provide input to—state and national registry efforts as they evolve. Recommendations for key registry design characteristics build off the GHG Reporting policy option (CC-2). Key elements are noted below. Additional information regarding important program characteristics is included in the Annex to Appendix J, GHG Registry Design Options Matrix.

- Geographic applicability at least at the statewide level and as broadly (i.e., regionally or nationally) as possible.
- Allowing sources to start as far back chronologically as good data exist, as affirmed by third-party verification, and allowing registration of project-based reductions or “offsets” that are equally rigorously quantified.
- Incorporating adequate safeguards to ensure that reductions are not double-counted by a single participant or multiple registry participants, and providing appropriate transparency.
- Striving for maximum consistency with other state, regional, and/or national efforts; providing greatest flexibility as GHG mitigation approaches evolve; and providing guidance to assist participants.

- Allowing the state to register reductions associated with its programs, direct activities, or efforts, including ownership of emission reductions associated with the properties (stationary and mobile) it owns or leases, and participate in emission trading. The revenue associated with the sale of any emission reduction credits generated by the state could be used to support the GHG emission inventory, forecasting, and reporting functions within state government (but of course could no longer be claimed as reductions owned or achieved by the state).

Timing: As soon as possible after a GHG reporting program is operating.

Parties Involved: Coverage should include all entities that can verify ownership of GHG emission reductions.

Implementation Mechanisms

The program should be overseen by the Montana DEQ. Incremental staffing and resource requirements are expected to be minimal if Montana joins a regional or national GHG registry (i.e., able to be addressed by existing staff up to perhaps an additional one-quarter full-time equivalent [FTE] staff person); they could be significant otherwise. Ongoing operating costs are expected to be borne or shared by participants benefiting from the registry.

Related Policies/Programs in Place

None cited.

Type(s) of GHG Reductions

Typically, all GHGs would be eligible.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

There remain significant uncertainties with respect to how various state, regional, and/or federal GHG registry programs may develop. Involvement in early registry implementation—as issues are deliberated among states—will give Montana an advantage in its ultimate outcome.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

CC-4. State Climate Public Education and Outreach

Policy Description

Explicitly articulated public education and outreach can support GHG emissions reduction efforts at all levels in the context of emissions reduction programs, policies, or goals. Public education and outreach is vital to fostering a broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) among the state's citizens. Such awareness is necessary to engage citizens in actions to reduce GHG emissions. Public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in the state. Ultimately, public education and outreach will be the foundation for the long-term success of all the policy actions proposed by the CCAC as well as those which may evolve in the future.

Policy Design

The TWG recommends that the state lead by example in its own education and outreach activities by establishing a proactive public education and outreach capability and using it to target education and outreach activities to five specific audiences:

1. Policymakers (legislators, regulators, executive branch, and agencies)—because implementation of climate actions hinges on policy makers' approval.
2. Younger generations—by integrating climate change into educational curricula, post-secondary degree programs, and professional licensing programs.
3. Community leaders and community-based organizations (e.g., institutions, municipalities, service clubs, social and affinity groups, and nongovernmental organizations)—in order to recognize leadership, share success stories, publicize role models, and expand climate involvement and participation within civic society.
4. General public—to increase awareness and engage citizens in climate-stabilizing actions in their personal and professional lives.
5. Industrial and economic sectors—in order to recognize leadership, share success stories, publicize role models, and expand climate involvement and participation within the business community.

Additional specific public education and outreach suggestions are provided in the Annex to Appendix J, GHG Education Design Options Matrix.

Goals: The overarching goal is a wholesale shift in public consciousness away from uninformed consumerism to commitment to choices that enhance personal, community, and statewide health and contribute to productive, thriving natural systems. To support monitoring of this goal, it is recommended that the state conduct a voluntary survey of a cross-section of Montana residents' lifestyles to elucidate the level of awareness of sources of individual GHG emissions and steps currently being taken to reduce them. The survey will provide a baseline for a parallel, more

qualitative report that will accompany the more technical reporting by non-residential sectors. An initial thought piece on the approach for such a survey is provided as an attachment to this policy option.

Timing: Public education and outreach efforts should commence as rapidly as possible and continue evolving and spreading over time; these efforts need to be institutionalized and made permanent.

Parties Involved: Public education and outreach should involve and apply to all parties, levels, and sectors.

Implementation Mechanisms

Montana's state climate education and outreach efforts should initially be overseen largely by the Montana DEQ, with support from other state agencies and Montana colleges and universities as available but should involve many parties; over time, responsibility should expand to all sectors. Incremental staffing and resource requirements are recommended, reflective of the state's major commitment to climate action. This should include at least two additional FTEs, one dedicated to planning, coordination, and the measurement of progress in the implementation of the overall CCAC recommendations and plan, and a second dedicated to public education and outreach efforts, maintaining a strong Internet-based presence, and coordinating with related volunteer, community, and other groups.

The Internet-based application would provide a method for communities and individuals to network and share information. It would serve as an educational tool by including information on the science of climate change in different forms (e.g., FAQs, articles, and links). It would serve as an organizing tool by providing information about Montana-specific problems and solutions, successes and failures, information about activities and groups in each region, and funding opportunities.

Outreach to those who do not have Internet access on a regular basis will need to be accomplished through Public Service Announcements, newspapers, posters, speakers for senior groups, and organizations that serve lower income people. Individuals at the local level would be trained to provide hands-on training in using the Internet-based application for those who are less familiar with the technology, by using computers at libraries, senior centers, and schools.

Those parts of the final plan that are adopted administratively or referred to the legislature will be summarized in an informal style in a brief, inexpensive publication to inform the general public. The reading level should be that of a general circulation newspaper, with enough specificity that citizens can understand what they can expect from governments and corporations, what they can contribute to the effort, and how they might benefit from personal and societal efforts at GHG reductions. The publication will be distributed through varied and cost-effective means, as newspaper inserts and in government offices, libraries, schools and colleges, and on business premises that agree to participate.

Related Policies/Programs in Place

None cited.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

None cited.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

ATTACHMENT

CC-4. STATE CLIMATE PUBLIC EDUCATION AND OUTREACH

Living in Montana Survey

The “Living in Montana Survey” will be designed to obtain inputs from state residents regarding designs, participation levels, and effects of Montana’s GHG management actions. The survey will be used to measure the extent to which state residents take actions to personally reduce GHG emissions, the kinds of actions they are taking and not taking, and their satisfaction with GHG management outcomes. The survey also will develop citizen input regarding the public’s support for (or opposition to) and willingness to participate in future GHG initiatives.

The Living in Montana survey instrument and sample will be scientifically designed to allow for measurements of behaviors and attitudes in Montana overall. The Living in Montana Survey is expected to be administered using a mail-out instrument. The survey instrument will be four pages long, using mainly close-ended questions. A major focus of survey questions will be to identify and quantify of sources of Montana’s home area and personal transportation–related GHG emissions. Other survey emphases will be to learn about Montana citizens’ participation in GHG management activities and the potential for recruiting state residents to take on new GHG management activities. The survey form should take respondents about 10–15 minutes to complete.

The Living in Montana Survey will be administered to a large sample population. Initially, it would be seeking about 3,120 respondents; this assumes a 60% response rate to 5,200 mailed-out surveys. The use of large sample size will allow for more accurate statistical analyses of overall survey results. The large survey sample also will allow better analyses of attitudes and behavior patterns for Montana’s subpopulations and geographic sub-areas. Greater understanding of locations, socioeconomic characteristics, and motivations of people who are likely to implement GHG management will help improve the effectiveness of public and private GHG policies.

The Living in Montana Survey process will culminate with preparation of the “Living in Montana Report.” This report will provide clear, nonpolitical summaries of question results. The Living in Montana Report will provide users with summary tabulations for each survey question. Where appropriate, survey outcomes will be presented using graphics and explanatory text.

It is hoped that results of the Living in Montana Survey will be highly publicized. The Living in Montana Report will be distributed to the Montana media. Newspapers and television and radio stations will be encouraged to run features. Access to survey information will allow Montanans to self-evaluate their responses to the state’s global warming issues.

An important survey task will be to identify GHG policies that are most and least productive. Survey results will be diagnosed to identify differences in behaviors and opinions of key sub-groups. Survey results will provide Montana with useful feedback about successes and values of GHG controlling actions and will allow Montanans to learn from each other—knowledge through their successes. Survey results also will provide GHG program administrators with better knowledge about factors that most influence GHG actions by Montanans.

Many Montana residents are likely to seek their own personal copies of the Living in Montana Report, and/or access to Living in Montana Survey data. Access to survey results is likely to be sought by Montana household members, students, business operators, elected officials, government and utility officials, and others.

GHG survey results will be made available to Montana residents via the state's Greenhouse Gas Web site where they can also download a copy of the Living in Montana Report. Distributing the Living in Montana Report via the Internet will save the Montana DEQ thousands of dollars in publication and mailing costs.

The Montana Greenhouse Gas Web site will also allow citizens to access more detailed tables and graphics of the survey results. Reviewers will be able to review and download data for key sub-tabulations of survey results. As proposed, the Living in Montana Survey will be repeated over time. Reviewers also will be able to compare survey responses in 2-year cycles. Trends in Montana's GHG management will be identified by comparing responses within one survey cycle to responses to similar questions posed in the survey 2 years later.

During the initial years of Montana's Greenhouse Gas initiative, the Living in Montana Survey will be repeated on a 2-year cycle. The survey's cycle is likely to extend to 4 or 5 years as Montana's GHG program matures.

An evolving idea will encourage Montanans using the DEQ Web site to review the Living in Montana Survey data to develop similar information about GHG emissions from their own housing area and personal transportation. While still logged to the GHG Survey Web site, interested citizens would be afforded an opportunity to fill out similar survey questions (not identical) describing characteristics of their own housing area and transportation emissions. Respondents could submit the completed survey over the Internet. It may be possible to provide participants with instantaneous feedback on their household and transportation emission patterns. Respondents and Montana DEQ staff would be afforded opportunities to work further toward GHG reductions.

Alternative

Another Web site approach will provide user-friendly calculators so people can evaluate how their current choices in energy use and product purchases contribute to GHG levels in the state. Use of the calculators is voluntary and private. Submittal of personal household and transportation information would be voluntary.

CC-6. Options for Statewide GHG Goals or Targets

Policy Description

The CCAC is to recommend actions that can be taken in Montana to reduce the state's contribution to climate change. Consistent with this charge, the establishment of a statewide goal or target can provide vision and direction, a framework within which implementation of CCAC policy recommendations can proceed effectively, and a basis of comparison for regular periodic assessments of progress. In pursuit of similar climate progress, at least 16 other states have established GHG reduction goals or targets.

Policy Design

The CCAC recommends that Montana establish a statewide, economy-wide GHG reduction goal to reduce gross GHG emissions to 1990 levels by 2020, for both consumption-based and production-based emissions, and further, to reduce emissions to 80% below 1990 levels by 2050. In lieu of establishing a specific target sooner than 2020, the CCAC also strongly recommends the early and aggressive implementation of the CCAC's comprehensive recommendations, along with a corresponding set of incentives to promote early adoption.

Goals: As noted above.

Timing: As noted above.

Parties Involved: All parties statewide.

Implementation Mechanisms

Statewide GHG reduction goals or targets can be adopted through executive order, legislation, and/or similar public policy vehicles.

Related Policies/Programs in Place

No statewide programs or policies cited.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

Not applicable.

Additional Benefits and Costs

To the extent that statewide GHG reduction goals or targets can help motivate additional and/or more rapid emission reductions, co-benefits associated with GHG reductions will also occur in parallel.

Feasibility Issues

None cited.

Status of Group Approval

Complete.

Level of Group Support

- 2020 Goal—Unanimous consent.
- 2050 Goal—Super-majority (one objection).

Barriers to Consensus

None.

CC-7. The State's Own GHG Emissions

CC-7.1. Establish a Target for Reducing the State's Own GHG Emissions

Policy Description

State government is responsible for providing a multitude of services for the public that are delivered through very diverse operations and result in wide-ranging GHG emission activities. State government can take the lead in demonstrating that reductions in GHG emissions can be achieved through analysis of current operations, identification of significant GHG sources, and implementation of changes in technology, procedures, behavior, operations, and services provided. The state can also encourage local governments, school districts, universities, and other entities in implementing similar GHG reduction strategies by partnering with them.

The establishment of broad-ranging goals for GHG reductions for state government will be helpful for setting an example and building expectations, but actual reductions must be realized at the agency level. Disaggregating the state's own GHG emissions to the agency level and requiring annual agency-specific reports on GHG reduction progress would be an effective way to measure and manage the state's emissions. A multiagency group should oversee the ongoing climate efforts of state agencies, providing direction, guidance, resources, shared approaches, and recognition to agencies and employees working to reduce the state's GHG emissions.

Policy Design

The state should establish GHG reduction targets for its own GHG emissions. State agencies first need to develop agency-specific GHG emissions inventory data. This will become the baseline data for ongoing emission reduction activities and measurements which will be summarized in annual reports by each agency. Agency reports will be aggregated into a summary report reflecting state GHG emissions.

Goals: Reduce GHG emissions from Montana's state operations to 1990 levels by 2018 (2 years earlier than the statewide goal), and 5% below 1990 levels by 2020 (5% lower than the statewide goal for 2020).

Timing: The first annual report by agencies will reflect agency-level inventories. The second annual report should reflect initial progress in reducing GHG emissions as agencies begin to plan and implement operational changes. Future annual reports should show further progress in reducing agency GHG reductions.

Parties Involved: Coverage should include all operations of all state agencies.

Implementation Mechanisms

Several possible implementation opportunities exist. Assuming adequate support from management in each agency and sufficient funding, efforts should focus on fleshing out GHG reduction baselines, and plans and could include memorandums of understanding (MOUs), green

procurement policies, training programs for agency facility managers, agency recognition and awards programs, and performance evaluations.

A Kickoff Campaign could start the Lead-by-Example effort and include educational and promotional activities and materials to explain personal and institutional responsibilities for changing behaviors and operations to achieve reductions in GHG emissions. The Governor's Office or the Montana DEQ could be responsible for developing and coordinating the Kickoff Campaign and ongoing Lead-by-Example efforts. The campaign should be started after completion of agency-specific GHG inventories and at the start of the first significant state-wide efforts at changing operations and policies to achieve GHG reductions.

Related Policies/Programs in Place

The Lead-by-Example Sustainable Government Committee is a multiagency body of government leaders and representatives from industry, environmental, and public interest groups. This Committee is a joint responsibility of the Montana DEQ and the Department of Administration. The Committee is responsible for providing direction, guidance, resources, and recognition to agencies and employees working on waste reduction, recycling, and sustainable operations in state government. This Committee's work and goals complement the work on GHG reduction and could absorb the responsibility for overseeing ongoing state climate efforts.

Type(s) of GHG Reductions

Steps to reduce energy demand would reduce all GHGs related to energy production. Support for renewable energy and cleaner energy will also help lower all GHGs associated with energy production. Improving existing recycling efforts would result in an associated reduction in GHG emissions from processing new materials. Transportation and fleet management could lower vehicle emissions, as would converting fleets to run on alternative fuels (e.g., biofuels).

Estimated GHG Savings and Costs per MtCO₂e

Not quantified.

Key Uncertainties

Agency participation.

Additional funding will likely be needed to accomplish this task effectively.

Additional Benefits and Costs

Education, recognition, and possibly lower operating costs.

Feasibility Issues

Same as uncertainties.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

CC-7.2. Climate-Neutral Bonding

Policy Description

At the request of the CC TWG, the Residential, Commercial, Institutional, and Industrial (RCII) TWG incorporated climate-neutral bonding into the design and quantification of policy option RCII-12 (State Lead by Example).

CC-7.3. Require Evaluation of GHG Emissions in Environmental Studies

Policy Description

Environmental Assessment (EAs) and Environmental Impact Statements (EISs) are written analyses of the potential impacts of state actions on the quality of the human environment. An EA is prepared to determine whether an EIS is required. An EIS is a detailed statement of the environmental impacts of a proposed action and alternatives to that proposal. It is prepared when there is a potential for significant impacts on the quality of the human environment. Requiring that consideration of GHG emissions be included as part of EA and EIS processes and documents would provide data for comparing reference case GHG emissions to estimates of future GHG emissions under each proposed development option. Such information could be helpful in targeting development decisions that minimize GHG emissions or pointing out the need for authority to regulate GHG emissions.

Policy Design

The CC TWG recommends that agencies be instructed to include data regarding reference case and estimated future GHG emissions in EA and EIS documents. This information will guide officials and developers in choosing technologies and activities that result in development which protects the environment and reduces additional contributions of GHGs.

When acting as a co-lead or cooperating agency in the preparation of federal EAs and EISs, the state will encourage the federal agency to include GHG emissions as an issue of concern in the analyses of proposed actions.

Goals: To make informed decisions encouraging development that produces the least GHG emissions.

Timing: Implementation may begin immediately with statewide department directives.

Parties Involved: State agencies, development proponents, and the public.

Implementation Mechanisms

Agency personnel who complete environmental studies would be given training and resources to help them understand and develop protocols for establishing GHG emission baselines and estimating emissions from proposed future development activities and alternatives.

Related Policies/Programs in Place

Air quality/permitting personnel at Montana DEQ already look at various air emissions for proposed projects that require EAs and EISs. DEQ personnel have air emissions databases already in place that could be slightly modified to look at GHG emissions.

Type(s) of GHG Reductions

All six pollutants of concern could be reduced, depending on the future projects analyzed in EAs and EISs and the state's regulatory authority. The amount that would be reduced is unknown.

Estimated GHG Savings and Costs per MtCO₂e

Not applicable.

Key Uncertainties

Some activities may not have currently inventoried GHG emissions or ways to accurately assess future emissions. Projections and analyses may depend on estimates based on similar activities. No known effective mitigation measures may exist for reducing emissions from certain activities. The state might not have the authority to require reductions in emissions.

Additional Benefits and Costs

This recommendation would add approximately 1 to 2 days to applicable analyses, depending on availability of data. Current personnel have sufficient expertise to develop or find the data. Decision makers can make better informed decisions that could contribute to the overall GHG reduction goals of this document. The public will be better informed and be better able to contribute substantive input in the planning process.

Feasibility Issues

Implementation does not require legislative action, additional personnel, or additional funding.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

CC-7.4. Join WCI and Consider Joining CCX

Policy Description

State government is responsible for providing a multitude of services for the public that are delivered through very diverse operations and result in wide-ranging GHG emissions. Montana can take the lead in achieving GHG emissions reductions—by the state itself and more broadly throughout its economy—and may be able to influence the national debate over appropriate responses to climate change by joining the Western Climate Initiative (WCI),⁴ which is a regional cap-and-trade effort, and by considering whether to join the Chicago Climate Exchange (CCX), which is a voluntary carbon reduction and trading program.

WCI is a joint effort by the states of Washington, Oregon, California, Arizona, and New Mexico (since joined by the state of Utah and the Canadian provinces of British Columbia and Manitoba) to develop a regional GHG reduction goal, identify market-based mechanisms by which it can be achieved, and participate in a multistate GHG registry. Among such mechanisms, it is widely believed that a cap-and-trade program will eventually be adopted by the federal government as the preferred vehicle for achieving widespread reductions in GHG emissions. In addition to jump-starting necessary GHG reductions across several states and in critical sectors of the economy, WCI is also seen as a precursor to a national market-based system for GHG reductions and may serve as a model for a national program.

By joining WCI, Montana would commit to more broadly applicable GHG reductions—both geographically and among economic sectors—and participate in the development of mechanisms for achieving these goals. One part of the overall strategy will likely be the utilization of offsets, which often include terrestrial sequestration actions to increase the absorption of carbon dioxide as a result of land management activities. Joining WCI will give Montana the opportunity to help define the nature and quality of terrestrial offsets over a large region of the country, helping to ensure that terrestrial offsets play an appropriate role in achieving the GHG reduction goals established by WCI and, subsequently, under a national regime.

CCX is also a market-based effort. Its membership is broad and extensive and includes three other states along with many U.S. cities and dozens of corporations. Joining CCX would require a reduction in Montana's own GHG emissions of 6% (from 1998–2001 levels) by 2010. As a condition for joining CCX, Montana would likely seek eligibility for a portion of its required reductions to be achieved from state trust lands through offsets from agricultural and forestland sequestration projects. Thus, joining CCX could provide potential revenue for the state through GHG reductions achieved on state-owned grazing and forest trust lands. By developing and utilizing such offsets and ensuring that these do, in fact, constitute actual reductions in emissions, Montana could get early experience on this learning curve, allowing it to become a ground floor player in terrestrial CO₂ offset markets during the period that WCI's offset policies are being developed. Ultimately, joining CCX could encourage more CO₂ reductions to be made in Montana and could provide additional revenues to the state as well as to private and tribal landowners. Note that the state would lose its claim to any carbon reductions associated with carbon credits that it sells.

⁴ This effort was originally launched as the Western Regional Climate Action Initiative (WRCIAI).

However, CCX is a private entity; thus its activities are not subject to the same degree of transparency and stakeholder involvement as a public program. In addition, concerns have been raised over elements of CCX's program, which is perhaps not surprising, given the complexity of the effort and its relative newness, including its treatment of offsets.

Policy Design

The CCAC recommends that the State of Montana join WCI and consider whether to take advantage of the trading platform provided by CCX. The aspirations and reach of the WCI, coupled with the techniques developed and applied by the CCX, may produce more effective, less costly outcomes than either entity would produce alone.

Goals: Join WCI (with respect to Montana's economy-wide GHG emissions) and consider joining CCX (with respect to state government GHG emissions) and, in either case, commit to meeting their respective GHG emission reduction obligations.

Timing: As expeditiously as possible, Montana should join WCI and decide whether to join CCX.

Coverage of parties: For WCI, coverage should include all sectors ultimately agreed to by the participating states; for CCX, coverage should include all operations of all state agencies.

Implementation Mechanisms

Initial implementation should probably be accomplished through executive order. Involvement in the WCI will likely require participation by the Governor's office or its designee. Ongoing Montana DEQ involvement is likely to be required to develop and update GHG emissions inventories and for further development of potential GHG reduction activities. The Montana Department of Natural Resources and Conservation (DNRC) should undertake and help with the development of terrestrial carbon offsets, particularly as they may apply on state grazing and forest trust lands.

Related Policies/Programs in Place

None cited beyond those above.

Type(s) of GHG Reductions

Principally CO₂.

Estimated GHG Savings and Costs per MtCO₂e

None cited.

Key Uncertainties

None cited beyond those above.

Additional Benefits and Costs

None cited.

Feasibility Issues

None cited.

Status of Group Approval

Complete.

Level of Group Support

Unanimous consent.

Barriers to Consensus

None.

Cross-Cutting Issues Technical Work Group GHG Inventories and Forecasts Design Characteristics Matrix

Annex to Appendix J, Cross-Cutting Issues—Policy Recommendations

Note: The following matrix provides complementary reference material to the CCAC Policy Option Description for CC-1 (GHG Inventories and Forecasts).

Purpose and Goals of Inventories and Forecasts:

1. Tracking GHG emissions trends
2. Identifying opportunities and areas for action
3. Others?

#	Design Element	Options	Design Considerations
1.	Responsibility for Preparing Periodic Inventories and Forecasts	<ul style="list-style-type: none"> • Sole responsibility with MT DEQ. • Shared responsibility between DEQ and other state agencies. 	<ul style="list-style-type: none"> • Purpose is to develop consistent, systematic inventories and forecasts from one year to the next. • Subject matter expertise is evolving rapidly.
2.	Inventory Frequency	<ul style="list-style-type: none"> • Annual. • Other. 	<ul style="list-style-type: none"> • Inventory reflects historical emissions. • Different sized sources currently required to report emissions on different schedules (e.g., major sources annually; minor sources every 5 years). • Must be consistent with any MT GHG Reporting Program, and should strive for consistency with other inventory and forecasting programs.
3.	Forecast Frequency and Periods	<ul style="list-style-type: none"> • Annual. • Intervals. • Other. 	<ul style="list-style-type: none"> • Forecasts reflect estimates of future emissions. • Define future years for which emissions inventory is prepared (i.e., frequency and overall forecast period). • Define intervals for future year forecasts (e.g., annual, 5-year intervals relative to a base historical year). • Limitations exist on availability of activity data for projecting emissions (e.g., current Energy Information Administration (EIA) projections of fuel consumption only go to 2030). • Should strive for consistency with other inventory and forecasting programs.
4.	Greenhouse Gases Included	<ul style="list-style-type: none"> • Six “Kyoto gases” (CO₂, HFCs, CH₄, N₂O, PFCs, SF₆). • Black Carbon. 	<ul style="list-style-type: none"> • Must be consistent with any MT GHG Reporting Program, and should strive for consistency with other inventory and forecasting programs. • Broader array promotes inventory building, public information, identification of GHG strategies, etc.

#	Design Element	Options	Design Considerations
5.	Basis for Calculating and Reporting Emissions	<ul style="list-style-type: none"> • Production based. • Consumption based. 	<ul style="list-style-type: none"> • Production refers to emissions generated by sources in-state (e.g., emissions from power generated in-state whether consumed in-state or exported). • Consumption refers to “Production” based emissions plus imports and minus exports, at least for the energy sector.
6.	Emissions Quantification	<ul style="list-style-type: none"> • Calculation methods & tools. • Federal 1605(b) program details quantification of black carbon emissions. 	<ul style="list-style-type: none"> • Apply current best practice methods (e.g., GHG Protocol and calculation tools). • Strive for consistency with other reporting and quantification programs. • Some “other” or “home grown” approaches may be necessary (e.g., Flashing emissions; IPIECA¹ and API²’s SANGEATM GHG Emissions Software).
7.	Public Access & Reports	<ul style="list-style-type: none"> • Internet access and/or online reports. • Paper reports. • Both. 	
8.	Funding	<ul style="list-style-type: none"> • State-funded. • Emission-based fees (would require legislative approval). • Some combination? • Other? 	<ul style="list-style-type: none"> • Inventories and forecasts can only be accomplished if adequate DEQ resources exist, so creative funding sources should be investigated (e.g., transaction fees, GHG credit sales, etc.).

¹ IPIECA is the International Petroleum Industry Environmental Conservation Association.

² API is the American Petroleum Institute.

#	Design Element	Options	Design Considerations
9.	Periodic Reassessment of Inventory and Forecast Approach	<ul style="list-style-type: none"> • Authority. • Purpose. • Frequency. 	<ul style="list-style-type: none"> • DEQ and involved agencies should have the ability to periodically reassess and revise (if necessary) designs element of the inventory and forecasting program.
10.	Other?	<ul style="list-style-type: none"> • None Cited. 	<ul style="list-style-type: none"> • None Cited.

Cross-Cutting Issues Technical Work Group

GHG Inventories and Forecasts Design Characteristics Matrix

Annex to Appendix J, Cross-Cutting Issues—Policy Recommendations

Note: The following matrix provides complementary reference material to the CCAC Policy Option Description for CC-2 (State GHG Reporting).

Principles for GHG accounting and reporting

*The GHG Protocol:*³

1. Relevance.
2. Completeness.
3. Consistency.
4. Transparency.
5. Accuracy.
6. Enable other goals.

*Other Concepts:*⁴

1. Additionality and Leakage.
2. Measurement, Monitoring, and Verification.
3. Permanence.
4. Allocation of Risk.
5. Carbon Value.

Potential Goals of GHG Reporting:

1. Identifying reduction opportunities.
2. Reducing risks (e.g., start learning curve).
3. Tracking GHG emissions, assisting the state in constructing annual inventories.
4. Participating in voluntary programs.
5. Participating in – or preparing for – mandatory programs.
6. Precursor for registry participation.
7. Opportunities for recognition.
8. Public reporting.
9. Consistency with other programs.
10. Others?

³ The GHG Protocol was pioneered by a collaborative effort of the World Resources Institute and the World Business Council for Sustainable Development.

⁴ From Bricklemyer, R., P. Miller, and R. Lawrence, Precision Agriculture Research Association, PowerPoint Presentation titled “Carbon Sequestration: What can it mean for Montana agriculture?,” January 30, 2004.

#	Design Element	Characteristics	Design Considerations
1.	Type of Program	<ul style="list-style-type: none"> • Voluntary. • Mandatory. 	<ul style="list-style-type: none"> • May need or want to constrain mandatory applicability to certain sectors and/or sources pending availability of accepted quantification protocols. • Mandatory reporting is in place in some states for permitted sources (ME, CT, etc.); anticipated soon for several others in Northeast and far West. • The Climate Registry and multi-state efforts such as the Regional Greenhouse Gas Initiative and the Western Climate Initiative will likely impact GHG reporting and registry practices.
2.	Sectors	<ul style="list-style-type: none"> • All sectors eligible. • Limited to certain sectors. 	<ul style="list-style-type: none"> • Participation may be limited by availability of quantification methods; may need to “stage” sector participation. • WRI calculation protocols: Stationary combustion, mobile, electric power, cement, iron & steel, aluminum, pulp & paper, wood products, lime, ammonia, purchased heat or power, others.
3.	Sources	<ul style="list-style-type: none"> • All. • Stationary combustion emissions. • Mobile combustion emissions. • Process emissions. • Fugitive emissions. 	<ul style="list-style-type: none"> • Could limit sources even within sectors, (e.g., via types, size thresholds, etc.). • Broader array promotes inventory building, public information, identification of GHG strategies, etc.

#	Design Element	Characteristics	Design Considerations
4.	Organizational Boundary	<ul style="list-style-type: none"> • Entity-wide (e.g., corporation-wide). • Facility. • Emissions unit or source point. • Other (?). 	<ul style="list-style-type: none"> • Clear definitions needed to avoid double counting where shared ownership exists. • Should strive to have design be consistent with possible future directions (e.g., mandatory reporting would not be enforceable above the facility level). • Combinations are possible (e.g., finer resolution aggregated to a greater whole).
5.	Reporting Period	<ul style="list-style-type: none"> • Annual. <ul style="list-style-type: none"> – Calendar. – Fiscal. • Other. 	<ul style="list-style-type: none"> • Should strive for consistency with other reporting programs.
6.	Greenhouse Gases Included	<ul style="list-style-type: none"> • Six “Kyoto gases” (CO₂, HFCs, CH₄, N₂O, PFCs, SF₆) • Black Carbon • Other 	<ul style="list-style-type: none"> • Should strive for consistency with other reporting programs. • Broader array promotes inventory building, public information, identification of GHG strategies, etc.
7.	Scope of Emissions Covered	<ul style="list-style-type: none"> • Direct. <ul style="list-style-type: none"> - “Scope 1.” • Indirect. <ul style="list-style-type: none"> - “Scope 2” - Indirect from purchased Heat & Electricity. - “Scope 3” - other indirect (e.g., outsourced activities, employee travel, etc.). • Both. 	<ul style="list-style-type: none"> • May need or want to “stage” coverage (e.g., start small & expand). • Direct emissions most like current reporting requirements, but may omit GHG reduction opportunities or encourage direct-indirect trade-offs. • For many entities, most GHG emissions are from indirect emissions sources.

#	Design Element	Characteristics	Design Considerations
8.	Emissions Quantification & Monitoring	<ul style="list-style-type: none"> • Calculation methods & tools. • Direct measurement (e.g., continuous emissions monitors (CEMs), stack testing). 	<ul style="list-style-type: none"> • Should strive to use current best practice methods, such as GHG Protocol calculation tools, and to have consistency with other reporting programs. • Some “other” or “home grown” approaches may be necessary (e.g., Flashing emissions; IPIECA⁵ and API’s⁶ SANGEATM GHG Emissions Software).
9.	Verification	<ul style="list-style-type: none"> • State verification. • 3rd party verification. • Self-certification. 	<ul style="list-style-type: none"> • If mandatory, the state may be able to use current verification procedures for criteria pollutants. • Montana DEQ does 3rd party verification?
10.	Public Access & Reports	<ul style="list-style-type: none"> • Internet access and/or online reports. • Paper reports. • Both. 	<ul style="list-style-type: none"> • “Confidential Business Information” (CBI) concerns.
11.	Project Level Reporting or “Offsets”	<ul style="list-style-type: none"> • Yes/No. • Constrain. 	<ul style="list-style-type: none"> • WRI: Raises quantification, baseline, “additionality,” secondary effects, reversibility, and double-counting issues. • Location of co-benefits achieved. • May be most useful when there is an externally-imposed constraint (e.g., a “Cap”).
12.	Funding	<ul style="list-style-type: none"> • State-funded. • Mandated requirement. • Emission-based fees (would require legislative approval). • Other? A combination? 	<ul style="list-style-type: none"> • Reporting is a necessary cornerstone for a GHG registry, so it may be appropriate to have registry participants share support costs.

⁵ IPIECA is the International Petroleum Industry Environmental Conservation Association.

⁶ API is the American Petroleum Association.

#	Design Element	Characteristics	Design Considerations
13.	Others?	<ul style="list-style-type: none"> None Cited. 	<ul style="list-style-type: none"> None Cited.

Cross-Cutting Issues Technical Work Group

GHG Inventories and Forecasts Design Characteristics Matrix

Annex to Appendix J, Cross-Cutting Issues—Policy Recommendations

Note: The following matrix provides complementary reference material to the CCAC Policy Option Description for CC-3 (State GHG Registry).

Notes:

- Builds upon GHG Reporting Design Characteristics Matrix.
- Some Reporting preferences could be outweighed by Registry preferences (e.g., if a regional registry has different specs).

Potential Goals of GHG Registry:

1. Recording of GHG reductions (vs. emissions).
2. A central, independent repository for credible info about emissions activities.
3. A “transaction ledger” – providing data management & accounting critical for trading (with or without a cap).
4. “Baseline protection” – encouraging early GHG reductions by ensuring that sources get credit for such actions.
5. An incentive to track & manage emissions, seek productivity and energy efficiency gains, accelerate learning curve regarding competitiveness & carbon markets.
6. Enhance public recognition and demonstrate corporate citizenship.
7. Possible vehicle for regional, multi-state, & cross-border cooperation.
8. Others?

#	Design Element	Characteristics	Design Considerations
1.	Key Design Criteria (<i>beyond those in the GHG Reporting Design Characteristics Matrix</i>)		
1.1	Define geographical boundaries	<ul style="list-style-type: none"> • State-only. • Regional (or broader). 	<ul style="list-style-type: none"> • Span of control. • Cost, economies of scale, & broader = better?
1.2	Verification	<ul style="list-style-type: none"> • State verification. • Third-party verification. 	<ul style="list-style-type: none"> • See GHG Reporting Design Characteristics Matrix.
1.3	Base Year	<ul style="list-style-type: none"> • Single specified year. • Single entity-chosen year. • Average of multiple years. • Adjustment rules? 	<ul style="list-style-type: none"> • Flexibility vs. Simplicity. • Must have good data for Base Year.
1.4	Project-level submittals	<ul style="list-style-type: none"> • Yes / No / Constrain 	<ul style="list-style-type: none"> • Against what baseline? • Additionality issues (what would have happened anyway)?
1.5	“Offsets”	<ul style="list-style-type: none"> • Yes / Some / No 	<ul style="list-style-type: none"> • Co-benefits location? • Nature / character?
1.6	Start Date		<ul style="list-style-type: none"> • Establish a “to-be-in-operation” date?
1.7	Ownership		<ul style="list-style-type: none"> • Risk of double-counting.
1.8	Transparency		
1.9	Others?	<ul style="list-style-type: none"> • None Cited. 	<ul style="list-style-type: none"> • None Cited.
2.	Technical Issues		
2.1	Treatment of minority ownership		<ul style="list-style-type: none"> • <i>GHG Protocol.</i>
2.2	Merger & acquisition issues		<ul style="list-style-type: none"> • <i>GHG Protocol.</i>

#	Design Element	Characteristics	Design Considerations
2.3	Quality Assurance; Uncertainty Analysis		• <i>GHG Protocol</i> .
2.4	Regulatory guidance (Protocols, guidance documents, etc.)		
2.5	Data flow; filing methods, etc.		• Confidential business information (CBI), legal authority, etc.
2.6	Others?		
3.	Ancillary, Administrative, & Operational Issues		
3.1	Location (Agency)	<ul style="list-style-type: none"> • MT DEQ? • Other? 	• Regional potential.
3.2	Software; Web Interface, etc.	<ul style="list-style-type: none"> • State-specific. • Other implementations, e.g., The Climate Registry, California Climate Action Registry, Chicago Climate Exchange, Environmental Resources Trust, Emissions Allowance Tracking System, etc. • Other? 	<ul style="list-style-type: none"> • Multiple needs (emissions inventory, allowances, mandatory, voluntary, etc.). • Rapidly changing “state of the art.”
3.3	Cost	<ul style="list-style-type: none"> • Transaction fee. • Publicly supported? • Other? 	<ul style="list-style-type: none"> • Development costs. • Ongoing operating costs.
3.4	Oversight & Management	<ul style="list-style-type: none"> • MT DEQ. • Publicly appointed board. • Other? 	

#	Design Element	Characteristics	Design Considerations
3.5	Reporting of Results; Recognition		
3.6	Others?	• None Cited.	• None Cited.

Cross-Cutting Issues Technical Work Group GHG Inventories and Forecasts Design Characteristics Matrix

Annex to Appendix J, Cross-Cutting Issues—Policy Recommendations

Note: The following matrix provides complementary reference material to the CCAC Policy Option Description for CC-4 (State Climate Public Education and Outreach).

Goals of Public Education & Outreach:

1. Overarching goal: Promote awareness among citizens about the impacts of climate change, solutions, and co-benefits of action.
2. Education provides a foundation essential for all climate action.
3. Provide access to information, products and processes that assist in improving quality of life and quality of the environment to all Montanans.

General Approach:

1. Target the key general audiences and efforts below:
 - a. “Walking the Talk” in terms of the State’s own efforts and outreach activities.
 - b. Policymakers (legislators, executive, agencies, regulators, etc.).
 - c. Younger Generations.
 - d. Community Leaders and Organizations.
 - e. Business and Industry.
 - f. The General Public.
2. Ensure long-term sustenance of education and outreach efforts regarding climate change.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
1.	State Government Actions The State should lead by example (i.e., “walk the talk”) regarding education and outreach.		
1.1	Create a multi-agency body to oversee on-going state climate efforts, starting with the implementation of CCAC policies adopted by the Governor; report progress to the public annually.	<ul style="list-style-type: none"> • Assemble annual progress reports & make them publicly available. 	<ul style="list-style-type: none"> • Staff the effort adequately; should have one or more “outreach coordinators” specifically tasked with outreach and coordination among agencies and organizations.
1.2	Establish an Education & Outreach Subcommittee of the body established in §1.1 to educate audiences regarding CCAC policies, and to oversee those relating to education.	<ul style="list-style-type: none"> • Lead implementation of education & outreach measures. • First task: Identify already existing resources & programs. • Identify additional needs and potential funding sources. • Conduct/review polling to identify public attitudes and points of access/resistance to change. 	<ul style="list-style-type: none"> • Staffed by a State Outreach Coordinator. • Identify diverse and efficient ways to disseminate the information collected, especially existing programs and resources.
1.3	Include state public education and higher education officials in the bodies established in §1.1 & §1.2.		<ul style="list-style-type: none"> • A “two-way street”: education officials bring research & info to the body, act as outreach arm for reaching students and others.
1.4	Educate state employees across-the-board, and assign “point persons” to do so on an on-going basis.		

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
1.5	Disaggregate the State's GHG emissions to the agency level and require annual agency-specific reports on GHG reduction progress.		<ul style="list-style-type: none"> • Make agency-specific reports public as part of the report in §1.1.
1.6	Issue regular press releases conveying climate change news, developments, events, etc.		<ul style="list-style-type: none"> • Internal releases should be frequent; external releases should be either monthly or quarterly.
1.7	Act in the role of a clearinghouse to help smaller government entities be aware of and take advantage of federal opportunities.		<ul style="list-style-type: none"> • Example: District 2 School Board is taking advantage of federal CREBS funding for renewables.
2.	Target Audience: Policymakers (legislators, regulators, executive branch, agencies, county commissions, city councils, school boards, etc.) Implementation of climate actions hinges on policymakers' understanding and approval.		
2.1	Educate policy makers on climate change & CCAC policies in order to promote acceptance and implementation.	<ul style="list-style-type: none"> • Conduct regular legislative briefings. • Identify & offer agency-specific information on climate issues & opportunities. • Involve town, city and county officials, school boards 	<ul style="list-style-type: none"> • Use input derived from policy maker interactions to develop new mitigation measures going forward.
2.2	Provide continuing outreach & assistance to Governor's office, legislature, and implementing agencies on a regular basis.	<ul style="list-style-type: none"> • Educate press liaisons from agencies, etc. • Provide regular press releases or updates on reductions, events, etc. • Require/request baseline and progress reports. 	<ul style="list-style-type: none"> • Provide research and background information necessary to craft effective policy and legislation.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
3.	Target Audience: Younger Generations Integrate climate change into educational curricula, post-secondary degree programs, and professional licensing.		
3.1	Organize groups of educators to identify, assemble, and employ climate change curricula appropriate to age groups.	<ul style="list-style-type: none"> • Pending. 	<ul style="list-style-type: none"> • Check out British Petroleum's www.aplusforenergy.org
3.2	Public Education Department: include climate change in science and social studies performance standards; identify (a) gaps in climate change education, and (b) curriculum to fill any gaps.	<ul style="list-style-type: none"> • In addition to specific curricula, incorporate climate change concepts as examples in reading, art, culture, geography, drivers education, etc. 	
3.3	Integrate “best practices” into public school design & construction to educate student (and parent’s) first-hand in their communities & colleges (i.e., walk the talk). For example: - Institute climate-neutral bonding: upgrade existing buildings to offset new construction. - Reduce GHG emissions in school transportation.	<ul style="list-style-type: none"> • Investigate whether Montana could provide bonding for school districts to fund energy efficient construction, or take advantage of federal financing opportunities (e.g., CREBS) • Include in-building signage & displays to explicitly point out efficiency aspects built in to public buildings. • Involve students and faculty in understanding and evaluating operations and maintenance of facilities. 	
3.4	Promote research into climate change and solutions at state universities; offer curricula and/or degrees in climate friendly technologies and practices.		

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
3.5	Integrate climate change into existing and/or new educational competition programs (e.g., Envirothon, science fairs, CC questions in academic competitions, a debating team topic, etc.).	<ul style="list-style-type: none"> Climate change topics as specific categories. 	
3.6	Work with science centers, zoos, and museums, and other non-profits to include a climate science focus appropriate to their core mission.	<ul style="list-style-type: none"> A key area for an Outreach Coordinator to focus on. 	<ul style="list-style-type: none"> Examples exist in other regions (e.g., Clean Air-Cool Planet science center initiative). Could provide speaking opportunities for teachers; have college professors host forums for high school students on weekend, etc.
3.7	Introduce core competencies on climate change into professional licensing programs (e.g., energy efficiency in building design and construction, use of recycled materials, etc.).	<ul style="list-style-type: none"> Look at all licenses for professions and facilities, for potential for education and outreach, plus examine their operations for savings potential, perhaps as part of licensing requirements where appropriate (e.g., hospitals, professional firms). 	
4.	Target Audience: Community Leaders & Community-Based Organizations (Institutions, municipalities, service clubs, social & affinity groups, NGOs, etc.) Recognize leadership; share success stories & role models; expand involvement and participation; within civic society.		
4.1	Identify individual community leaders who are acting effectively on climate change; showcase and share their successes.	<ul style="list-style-type: none"> Enlist/encourage them to be a de facto Speakers' Bureau. Host discussion forums featuring them. Bring in speakers from other communities to public venues to share successes. 	<ul style="list-style-type: none"> Include all walks of work & life (retail, services, manufacturing, healthcare, auto, facilities, etc.). Put examples, guidance, links, contacts, etc. up on the web clearinghouse.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
4.2	Identify “late bloomer” individuals and target a special effort to include, educate, and prod them to act.		
4.3	Engage associations and participate in their meetings periodically to educate them about climate change and sector-specific mitigation actions.	<ul style="list-style-type: none"> • Set up competitions and challenges between organizations and/or communities to achieve broader participation and effective solutions to GHG emissions. 	
4.4	Develop statewide recognition program(s) for community leaders and entities.	<ul style="list-style-type: none"> • Small incentive grants/awards for individual, community, and non-profit successes. 	
4.5	Organize & host outreach events that focus on leading by example, sharing how-to, co-benefits, illuminating financial risks and opportunities, etc.	<ul style="list-style-type: none"> • Assist organizations and localities in self assessment, opportunities, risks. 	
4.6	Identify, assist, and leverage community-based organizations with expertise or interest in climate-related issues.	<ul style="list-style-type: none"> • Faith community. • Service clubs; sportsmen; recreational/hobbyist groups. • Metropolitan planning organizations. • Environmental, social, & civic advocacy organizations. • Non-profits. • If they’re not already interested, give them reasons to be, based on their raison d’etre. 	<ul style="list-style-type: none"> • Include the health and human services sector. • Libraries play a key role in information dissemination. All publicly funded libraries should provide a prominent section with resources on ameliorating climate change.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
4.7	Work with community-based organizations to identify & build upon climate issues related to their core mission.	<ul style="list-style-type: none"> • Public health vs. new disease vectors? • Low-income vs. additional stressors? • Help them move from mission statement to seeing how climate change might be relevant. • For those that organize their members to affect policy, facilitate their development of lobbying campaigns. 	
4.8	Support and facilitate outreach and education within community-based organization regarding climate change issues and actions.	<ul style="list-style-type: none"> • Provide content for websites, newsletters, listservs? • Coach & assist Community Outreach coordinators? 	
4.9	Develop & coordinate a network of community-based organizations acting on climate change so they can link up, organize joint events, etc.	<ul style="list-style-type: none"> • Community Outreach coordinators, assisted by state climate outreach function(s) noted above. • Assistance in organizing. 	
4.10	Encourage cities to join ICLEI's ⁷ Cities for Climate Protection program.		
4.11	Encourage cities to join the U.S. Mayors Climate Protection Agreement. ⁸		

⁷ International Council of Local Environmental Initiatives. See www.iclei.org.

⁸ See <http://www.ci.seattle.wa.us/mayor/climate/>.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
5.	Target Audience: Business and Industry Promote best practices, recognize leadership; share success stories & role models; expand involvement and participation.		
5.1	Extend training programs for RCI building and facility operators.		
5.2	Promote economic development in the energy technology sector.		
5.3	Promote climate change related R&D and demonstration projects for economic development.		
5.4	Educate business and industry sectors regarding combined heat and power (CHP) in order expand its use and technological penetration.		<ul style="list-style-type: none"> • Some utility and/or environmental regulatory changes could also facilitate greater penetration of CHP.
5.5	Inform sources of the advantages of registering GHG emission reductions.		
5.6	Develop and provide concrete information on co-benefits to entities in order to boost their climate efforts.		
5.7	Publicize and provide incentives, funding avenues and recognition for those businesses and industries reducing climate impacts..		

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
5.8	Provide opportunities for business to share successes and problem solving.	<ul style="list-style-type: none"> • Sponsor business “brown bag lunch” meetings. • Provide easy access to other resources and entities that can assist businesses in achieving emission reductions. 	
6.	Target Audience: General Public Increase awareness and engage in climate actions in personal and professional lives.		
6.1	Educate broadcasters, reporters, editorial boards, etc. about climate change, the risks it imposes, and solutions.	<ul style="list-style-type: none"> • Provide access to information and success stories. • Provide photos, B-roll (background video), and media packages of background information. 	
6.2	Work with state broadcasters and print media associations to develop & run climate change public service announcements.		
6.3	Conduct public polling to benchmark strength and depth of climate understanding; track over time to measure progress and better tailor outreach efforts.	<ul style="list-style-type: none"> • (There’s an insert above that repeats this, but it may be worth repeating.) • Life in Montana Survey • Montana Greenhouse Gas Website tools 	
6.4	Keep a high profile on climate change issues and actions through regular public mention by Governor and other public leaders.		
6.5	Develop and use a state-based “brand” on climate awareness and action.		

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
6.6	Develop and maintain a state climate change website for the public; establish and maintain a web-based clearinghouse for climate change information and education resources.	<ul style="list-style-type: none"> • Link to scientific developments, What you can do, How you can help, What the state is doing, etc. • Measuring individual efforts 	
6.7	Build recognition of the sources (causes) of GHG emissions.	<ul style="list-style-type: none"> • Create a hierarchy checklist, from easiest/cheapest to progressively more difficult, of things individual can do, with benefits for each. 	<ul style="list-style-type: none"> • Include agriculture, food production, etc. to make it as personal as possible.
6.8	Work with existing company outreach efforts to customers (e.g., utilities) to enhance awareness of climate change issues & actions.	<ul style="list-style-type: none"> • Retail advertising and/or “bill stuffers”. • Environmental disclosure of electricity fuel mix/emissions; recycled content, etc. • Product messages on labels and attached flyers. 	
6.9	Promote local farm produce and products, including biofuels and biopower.		
6.10	Promote clean fuel technologies, especially local ones.		<ul style="list-style-type: none"> • Locally produced fuels could include, for example, combustion of wood chips for electric power generation, production of ethanol from local cellulosic feedstocks, biodiesel from locally produced feedstocks, etc.

#	Measures & Strategies	Tasks & Examples	Notes & Elaborations
6.11	Promote green power in order to expand subscription.	<ul style="list-style-type: none"> • Make green power purchase options available to all electricity consumers. • Enhance marketing and promotion of green power where this purchase option is available to consumers. 	
6.12	Require environmental disclosure on utility bills.		
6.13	Add GHG to air quality awareness efforts.		
6.14	Provide access to other sources of information	<ul style="list-style-type: none"> • Website links. • Local organizations. • Library resources (e.g., through displays on-site and on websites). • Universities. 	